

means of a large syringe with a curved pipe. After using this remedy for four or five days his pains ceased, and he has had no return of them for five years.

In the work under consideration, every disease to which the rectum and anus are subject, is elaborately treated. It would extend this review beyond the allotted bounds, were we to give an analysis of every division of the author's essay. Those, therefore, who wish to profit by all his valuable observations, by his method, his clearness, and his erudition, we must refer to the work itself, or to the long article in the *Dictionnaire des Sciences Médicales*, of which it is little else than a transcript. If our author has erred in his manner of treating this subject, it is in being too diffuse, and in occupying too much space in controverting points long since exploded.

XII. *Traité des Plaies de Tête et de l'Encéphalite, principalement de celle qui leur est consécutive; ouvrage dans lequel sont discutées plusieurs questions relatives aux fonctions du système nerveux en général.* Par J. P. GAMA, M. D. Professeur à l'Hôpital Militaire d'Instruction du Val-de-Grace. Paris, 1830.

*Treatise on Injuries of the Head and of Encephalitis.* By J. P. GAMA, M. D. &c.

MANY of the most distinguished members of our profession entertain the opinion, that a stricter union is required than has heretofore existed between medicine and surgery, diseases and accidents having between them so many intimate pathological relations and principles, as to rest on pretty nearly the same base of treatment, excepting mere mechanical contrivances and manipulations. Perhaps the principal justification of this division into medicine and surgery, of the executive duties of the profession, exists in the circumstances of surgery requiring a vivid and detailed knowledge of anatomy, and a certain adroitness of hand, which is as much a peculiar gift as the art of poetry, whereas the practice of medicine can, and indeed most frequently does, dispense with both. The value, however, of recognising common principles to the two departments, is proved by the easy transition from the scientific practice of surgery to that of medicine, and by the most skilful surgeons having also become the best general practitioners.

Influenced by similar convictions, the author of the work before us

has allied to a sound physiological basis, the phenomena and symptoms arising from accidental injuries of the head and spinal marrow, and has harmonized with the general principles of practice, the indications for their cure. By pursuing this course, he has been able to show, that the phenomena heretofore attributed to a mechanical compression of the brain, have resulted from positive alterations in its substance, and from inflammations, the consequence of the latter; that concussion and congestion, when solitary, produce merely negative symptoms, but when complicated with encephalitis as a consequence, they are then attended with convulsions, spasmodic motions, and irregularities in the actions of the viscera; that when paralysis follows encephalitis, it results from a disorganization of the brain; and that congestion, inflammation, and disorganization, very commonly have no perceptible interval between them. His dissections of patients have also led him to the conclusion, that there are no symptoms, during life, whereby we can discover the morbid changes of consistence and appearance which the brain is undergoing from inflammation.

By the process of uniting physiology and pathology, Mr. Gama thinks that his experience has established the following precepts. 1st. That the immediate union of all wounds of the cranium, without exception, is indispensable to the preventing of encephalitis, and obtaining a rapid cure. 2d. That permanent local bleedings should be immediately resorted to, in preference to phlebotomy, or the reiterated and abundant application of leeches at distant intervals of times; for the reason that the former acting continually afford the brain time to reinstate itself without reaction. 3d. That the trepan should not be used, except for removing loose particles of bone and foreign bodies. 4th. That revulsives are generally useless when the local treatment is proper, and are often injurious, and that they should not be employed until the cerebral irritation begins to decline. 5th. That cold is a difficult and dangerous application; and 6th. That aliments should not be withheld after a certain time, when the digestive apparatus is sound.

The treatment of wounds of the cranium has always been considered highly difficult and embarrassing, and has undergone several important modifications in its progress from the most ancient times to the present. Mr. Gama, in a preliminary chapter, has, with sufficient propriety, given a sketch of its various epochs, and of the attendant pathological notions: by this course he perhaps satisfies us better in regard to his own views. He opposes the opinion of MORGAGNI and HALLER, that HIPPOCRATES knew of encephalic lesions

on one side producing paralysis on the other, and he thinks it well ascertained that this and the other precise anatomical notions attributed to the school of Cos were additions of a later period.

It appears, however, that there was a good deal of exactitude among the ancients in the discrimination between apoplexy and paralysis, the former from the general prostration of the intellectual and motile powers, which resembled the effects of a stroke of lightning or the supposed influence of the stars, was called *sideration*; the latter was supposed to be produced by a vitiated state of what they termed *pneuma*.

No important change was made for many centuries in the doctrines concerning wounds in the head, excepting the gradual confounding of apoplexy and paralysis, and the introduction of many preposterous compounds, as local applications, to detach scales of bone, to dry up discharges, and to consolidate fractures. In 1518, BERENGER DE CANVI undertook a reformation on points of practice and pathology, and by a judicious study of the Arabians, and many original observations, succeeded in ameliorating the former, and in casting considerable light on the latter. At this time wounds of the head were very generally kept open, to depurate them and to get rid of vitiated humours.

AMNROSE PARE instituted the practice of closing immediately all incised wounds of the cranium, so as to withdraw them from extraneous influence, and when inflammatory symptoms followed, of treating them by scarifications and leeching on the lips of the wound, or as near as possible to it.

GAB. FALLOPIUS taught, that a suppuration might occur in the brain on the side opposite to the original injury. In the progress of intelligence on lesions of the brain, cases of recovery presented themselves where large surfaces of brain were exposed, and even considerable quantities of its substance removed and lost. It was also observed, that where occult suppurations occurred, the patients died, and the inference was drawn, that death resulted from these depots being permitted to remain; hence was introduced the great freedom of trepanning, which was finally carried to as abusive an extent as ever happened to a supposed remedial process. It is perhaps impossible to read the accounts of POTT and DESAULT on this subject, and the murderous dogmas which prevailed at their time, without shuddering at the sacrifices of life which they produced.

Among the important ameliorations of doctrine on wounds of the head, should be mentioned those produced by the Academy of Surgery, in Paris, having offered, (about the year 1766,) as a subject of

a prize essay, "The establishment of a theory of counter-blows, (*contre-coups*,) in injuries of the head, and the practical consequences to be deduced from it." The result of the inquiries on this subject was the confirmation of the ancient hypothesis, that when a part of the body is paralytic, the seat of the disease is on the opposite side of the brain; and to this SAUVAGES added, that if one side be paralytic, and the other convulsed, the disease, or at least its most active state, is on the convulsed side, but if there be convulsion alone, the disease is on the opposite side.

POTT improved the practice of England, by saving the scalp, where former surgeons directed it to be removed, he was, however, unreasonably fond of the trepan, and gave a currency to the use of it, which has been felt in this country even to the present time. Desault on the contrary, his contemporary in France, educated with the same propensities, penetrated through the errors of the practice, and dispelling the clouds of prejudice which surrounded it, boldly denounced the trepan, after having proved incontestably at the Hôtel Dieu of Paris, that more patients died after trepanning, than under similar circumstances of injury, where this practice was not adopted. This may be considered as the first great step in modern times, to an improved treatment of injuries of the head, and succeeding experience in all quarters has served to give it additional confirmation. Though it must be admitted, that there are a few of the old regime of surgeons who retain their penchant for the trepan, for example, Mr. BOYER.

About the middle of the last century many experiments were instituted to resolve the problem of compression of the brain. A case, cited by LAPEYRONIE, of a wounded man, who became comatose whenever pus accumulated on the surface of the brain, gave a tone to opinion on this subject which had the effect of confounding the symptoms of compressed brain with those of inflammation. In injuries, therefore, the error was generally committed of attributing paralysis to the mechanical action of the blood supposed to be extravasated from the vessels, instead of to inflammation of the brain. Mr. SENNES' experiments, on the contrary, have gone to prove that liquids pushed with care between the dura mater and the brain do not produce paralysis. Numerous clinical observations also go to prove that very extensive and deep depressions of the cranium may produce no marked effect upon the functions of the brain. Mr. Gama, (p. 229,) mentions his having met at Strasbourg a woman of seventy-three years of age, who, for three years, had borne a depression of the right parietal bone as large as the hand, and which gave to the cranium an irregular form. She had not experienced at the moment of the fall any

cerebral derangement, and neither had she felt any since. Facts of a similar character are now in the personal experience of numerous members of the profession.

M. Gama has also given some good expositions of the application of physical laws to injuries of the cranium; many of them of course can have but little novelty, as they consist in the development of the doctrine of vibrating bodies of different forms and densities. The experiment is familiar, that when a hollow globe is struck at right angles to its surface, if its strength be superior to the momentum of the impinging body, it is momentarily depressed at the point struck, and also at the opposite point, while the other portions recede from the centre, afterwards the latter approach the centre, and the former points recede, and so on, successively, till the force of impulsion is expended. But if any part of the circumference of the globe is inadequate to convey the impulsion, this part is fractured. Fractures, therefore, may not only occur at the place struck, but in any other place; the latter are called indirect fractures, or those from *contrecoup*, and they exist much less frequently than the others.

As the cavity of the cranium is occupied by the brain, it most commonly happens that much of the impulsion from blows is received also by the latter, and hence the various lesions which violence upon this organ produces. With the view of giving some degree of precision to his ideas in regard to the tracks in which such impulsions are communicated, M. Gama fixed, in an oval glass matrass, skeins of thread running in different directions, and filled the vessel with isinglass size, which, upon cooling, became near the consistence of the brain. The vessel was then corked. With this ingenious device, he found that strong percussions on the circumference of the matrass, communicated vibrations to the whole mass, in addition to which there were principal vibrations passing in particular directions indicated by the threads. Moderate impulsions were seen principally at the point struck, and extended themselves from it to small distances around; on the contrary, severe concussions caused the size to be for a moment detached from the vessel at the point struck, and also at the opposite or diametrical point, the impulsion was then exhausted by vibrations over the mass of the size not following any determinate direction. These effects, when applied to the head, would of course be somewhat modified by its shape and variations of thickness, but the experiments serve at least to give us some general notions on the subject.

When the matrass was reversed, and the neck struck from below, the threads vibrated from the centre of the mass to its circumference,

and the size was not detached at the opposite point. We may here presume an analogy between the vessel and the head, when impulses are communicated to the latter through the vertebral column.

The physiological speculations introduced into this work, form a highly interesting portion. The author appears unfavourable, (See page 90,) to the notion of the ancients, which has been latterly reproduced, in a more elaborate shape, by Mr. CHARLES BELL, of there being two orders of nerves, one for sensibility, the other for motion, and which was supposed to explain the phenomena of paralysis. He considers that there is no line between the mechanical or contractile movements, and those which are inseparable from sensations. That there is but one vital principle, from which emanates both sensation and motion.

"Mr. Charles Bell says he is by no means of this advice, and his opinions have revived questions formerly adjudged. We read in his work, that besides the nerves of vision, of smell, and of hearing, there exist four other orders entirely different in their functions, and interwoven so as to form but one order. These are the nerves of sensation, of voluntary motion, and of respiratory motion, and in fine, nerves which, because they have not the qualities which characterize the three other orders, seem to unite the body into a whole, for the accomplishment of the functions of nutrition, growth, decrease, &c. Mr. Charles Bell announced that he was going to dis-intricate the nervous system, but where is the evidence of his success? What does he mean by those four orders of nerves which have different functions, and which yet form but a single order? What idea does the last of these orders present, whose nerves, because they want the qualities of the three other orders, re-unite the body into a whole? Why not admit in all its simplicity, the division which he disfigures here, that of the life of relation and of organic life?"

M. Gama also denies that the experiments performed in England and France, to prove that the posterior fasciculi of spinal nerves are those exclusively of sensation, and the anterior ones those exclusively of motion, have by any means succeeded in demonstrating such a theory. One of its most zealous defenders, (*Journal de Physiol. experim.* tom. 2d, p. 366, et suiv.) admits that whenever the posterior roots are excited, contractions are produced in the corresponding muscles. Facts seem to establish that sensation is not exclusively in the posterior roots, more than that movement is in the anterior. Our author has obtained by galvanism, contractions with the two kinds of nerves.

M. G. has emitted the following ideas on taste, (gustation.)

"Let us remark at first, that in spite of the efforts and talent of men who have entered upon the inquiry, in spite of the most numerous researches and experience, it is still unknown whether gustation has an appropriate nerve. I will say in anticipation, that it cannot have. The apparatus of taste is composed, besides the tongue and its nerves, of the membranes on the interior of

the mouth, of the pharynx, of the lips, and of the salivary glands. None of those organs exercises an action in the function under discussion, but inasmuch as it is united to the others. We do not taste the most savoury body in placing it upon the tongue carried designedly beyond the lips; it is not tasted in applying it to the palate: gustation results from the combined action of the opposite parts of the buccal surface."

In some of these observations at least, we cannot but think our author mistaken.

So much for the physiological and pathological views of M. Gama. We shall now proceed to sketch his modes of treatment.

When punctures of the scalp and pericranium are, as is commonly the case, followed by urethrisin and slight inflammation, his remedy consists in dilating moderately the wound, then applying compression to it, and afterwards small folds of linen soaked in water. If the inflammation be severe, he recommends leeches to the part, to prevent the extension of the inflammation to the encephalon. For simple contusions, attended with extravasation of blood, or infiltration of it, he recommends a graduated compress, fastened on firmly, and sometimes an incision to the cranium, to give vent to the blood. In contused or incised wounds, he adopts an identical plan of treatment, believing that the only useful end in their distinction is to give a more methodical exposition of their causes. The first indication is to unite wounds, and all others are subordinate to it. He discusses, (p. 29,) the objections of hæmorrhage, and of suppuration, to this mode, and considers himself to have proved, by the cases which he narrates, their futility. He therefore strongly reprehends the ordinary custom of separating the lips of such wounds, and of charging them with a succession of irritating dressings, such as lint and stimulants of different kinds.

In regard to concussion of the brain, (commotion,) he adopts the usual routine of first recalling the patient to consciousness by dry frictions; or frictions with alcohol, vinegar, or even boiling water, or ammonia in extreme cases. When the patient is resuscitated, he is to be kept from a relapse by sinapisms and blisters on the arms and legs, but by no means near the head, as they attract the blood to the regions on which they are placed. When the organs begin to resume their activity, the most critical period of treatment arrives; bleeding in the arm or foot is then highly useful, but while resorting to it to keep from the brain an improper quantity of its natural stimulant, the blood, it is also to be remembered, that if the quantity drawn be excessive, it produces a dangerous collapse of the system, which may end in death.

When there is an intimation of encephalitis, M. Gama considers that there is no remedy equal to leeching, owing to its evacuating so completely the sanguine capillaries. And as this disease is to be dreaded in most cases of severe wounds of the head, he recommends us to approximate, by strips of sticking plaster, the edges of the wound, leaving intervals between the strips. In these intervals are to be applied from twenty to thirty leeches, according to the severity of the symptoms, and which are to be replaced by others, as the flowing of blood which they provoke diminishes.

"This series of applications must last from two to six days, or even more, if the persistence of the accident require it. The weakness which follows abundant capillary evacuations should not be feared; patients quickly surmount it; while encephalitis would cause death. When it is thought proper to moderate the flow, it is necessary to diminish the leeches by one-third, until their application be entirely suspended. This first interval should be of twenty-four hours, then the depletions should be more frequent or scarce, until the probabilities of cure are sufficiently numerous to leave no fear of a relapse."

Thus conducted, the treatment lasts ten or fifteen days, or more, during which the important object is, that the bleeding should be so managed as to calm completely the symptoms, and to dissipate every trace of irritation. So long as the brain perceives any excitement, either locally or generally, in head-ache or heat, this mode of capillary evacuation is to be continued. The complete restoration of the cerebral functions is the indication of recovery being at hand, and convalescence may then be brought to a happy issue by regimen and prudence. (p. 424.)

Our author thinks that the first evacuations should be made upon the injured point, but afterwards the forehead and temples are better, as the anterior lobes of the brain inflame more readily than other parts of this structure, and as a depletion there extends its sympathetic influence elsewhere. The neck is a much less efficacious place than the one indicated, notwithstanding the greater quantity of blood which it may furnish, by the jugular veins being punctured. Cupping with scarifications M. G. considers as a very inferior remedy to leeching, from the excitement which it produces and the inconsiderable quantity of blood obtained by the process. The opening of the temporal artery is a remedy of the first importance, though unhappily it is now too much neglected.

M. Gama gives a qualified approbation of the ordinary treatment by the application of cold to the head, as its effect is to absorb the superabundant caloric discharged from the brain and the adjacent parts. In cerebral inflammations, however, he considers that there



are but two periods favourable to their annihilation by the action of cold; the one is their commencement, and the other their decline. In the interval of these stages, sanguinous depletion is so useful that cures are rarely obtained without it. In supposing, says he, that the blood may, by the action of cold, be expelled from the irritated tissues at first, yet it combines so quickly with an irritated tissue which it has once injected, that there is great danger of disorganization unless this process be arrested, and in the case of the brain experience shows that this disorganization is fatal. The application of cold is less worthy of the confidence which it enjoys, because when encephalitis does not promptly yield to its sedative influence, it is aggravated; for if the evacuations which were necessary have been omitted, the cold masks the inflammatory symptoms, keeps them stationary, and gives time to the cerebral affection to advance. If the attempt be made to unite cold with the application of leeches, they either refuse entirely, or take indifferently, from the capillaries being constricted. In regard to the usage sometimes resorted to, of making cold applications to the head and plunging the rest of the body in a warm bath, its effects are extremely uncertain. If the cold moderates the congestion, the heat augments it, by accelerating the circulation, and the probable result is an equilibrium of power, to say the least. Our author considers that the best way of applying cold, is by compresses dipped in water kept at nearly the freezing point. The first applications should be continued a long time, then the duration should be gradually diminished, until the application is finally discontinued. By these precautions reaction is prevented, and also the liability to catarrh, from the displacement of the apparatus, when pounded ice is applied in bladders.

The summary of his arguments on cold applications is, that they are never indispensable, are but rarely useful, and then serve rather to mask the symptoms of encephalitis, and thereby to cause the loss of precious time, which might have been employed in the use of means more potent and effectual.

We consider M. Gama's observations on the use of revulsives, as not the least valuable of his opinions. He starts on this point with ideas sufficiently recognised by modern pathologists, that revulsion has for its objects to excite a super-action upon sound organs, and thereby to annihilate that of diseased ones. But it is to be remembered that this result cannot be obtained when the inflammations are violent and acute, for it is then necessary to moderate them before such a resource is available. Moreover, revulsion is of very difficult

application when encephalitis proceeds from wounds of the brain, for the cause being local, the affected parts must undergo a succession of changes before they can be brought to the normal state.

In regard to purgatives; they should be given in fractions of doses, with the view to obtain a prolonged series of evacuations, whereby a continual excitation of the stomach and intestines is kept up. The old practice of Desault, of a grain of tartar emetic, dissolved in a large quantity of watery drink and given in very small doses, is recommended. The revulsive effect may in this way be obtained, in cases where the inflammation is slight. M. Gama, however, does not seem to put much reliance on this treatment, and tells us to remember that the obstinate constipation so common in the first days of cerebral inflammation, is a counter-indication to revulsives, and that they should not be prescribed till the constipation begins to disappear, which is in itself a proof of returning health. The stomach, owing to its close sympathy with the brain, yields with difficulty to revulsives; the colon rather easier, and the rectum is probably the most suited of the internal organs to admit this process of treatment. Therefore, demulcent or slightly stimulating injections may be used in the first periods, when there is obstinate constipation; afterwards the injections may be made more irritating. M. G. seemingly from deference to the experience of M. FOUQUIER, makes a sort of hypothetical acknowledgment of the advantage to be derived from strychnine, under treatment thus regulated.

Revulsives applied to the skin, under the form of blisters, sinapisms, and ammoniacal preparations, are, like cathartics, only useful when the acute inflammatory action has subsided, under other circumstances they are more likely to prove injurious by exciting the brain.

When sympathetic irritations of the stomach, liver, &c. are excited by the encephalitis, they are to be treated like primary affections of the same organs.

The following observations on diet are so important, and so applicable also to other affections, that we shall give a close translation of them:—

“The diet should be severe so long as the symptoms preserve their violence, or an effort is making to keep them off; but when resolution is manifested, an absolute abstinence from aliments would be injurious, and experienced practitioners take good care not to fall into such an excess. They know that the stomach, too long deprived of its natural stimulants, when the desire for them is exhibited, becomes irritated, and that its suffering may, in patients attacked with encephalitis, radiate to the brain and renew its affection. Would it not in effect be to expose patients, who are just freed from an encephalitis, or have

been menaced with it, and whose digestive organs are sound, to the accidents produced by a privation of aliments, if they were kept on too severe a diet? To the same extent as the dangers of a premature alimentation are to be feared, so are those of a contrary excess to be avoided. Light soups with the addition of eggs, small quantities of farinaceous matter, and light gruels, should therefore be granted so soon as the encephalitis begins to dissipate, and the digestive organs having remained without irritation, show themselves disposed to act. This nourishment is afterwards to be gradually augmented, accordingly as the first trials show its happy effects. It is to be remarked, besides, that aliments then act in a manner corresponding with revulsives; that they produce a gastro-intestinal stimulation, favourable to the disappearance of cerebral accidents, and that it is not rare to see the inactivity of the intestines dissipated under their influence, after having resisted medicinal agents. Cerebral phlegmasiæ, when exempt from gastro-enteritis, do not seem susceptible of being worn away, like those of the digestive apparatus, by a prolonged and very severe diet. Wine, and all stimulating liquids, should be positively forbid, because they excite with too much facility the sanguineous system and the nervous apparatus."

From the preceding exposition of M. Gama's work, it is evident that there is sufficient novelty in it to render it interesting, and as many of his precepts are of a practical nature, we, with hearty good will, recommend its perusal.

W. E. H.